

cavity down to the chalaza, as in the Rosaceae, but for some reason, possibly as a result of the peculiar mode of life shown by these plants, the outgrowth process no longer occurs, so that the empty "Pseudoembryosack" remains. The Crassulaceae are thus regarded as transitional forms between the Podostemaceae and the Rosaceae.—LESTER W. SHARP.

Antarctic lichens.—In 1909 DARBISHIRE¹⁷ reported on the very extensive collection of lichens secured by the Norwegian polar expedition of 1898–1902 under NANSEN. In connection with this report it was shown that from the region including Arctic America, Greenland, Spitzbergen, and Iceland about 500 lichens have been recorded. A similar report has now been published by DARBISHIRE¹⁸ for the antarctic region, based upon the collection brought back by the Swedish antarctic expedition of 1901–1903. There are now known 534 lichens from the general antarctics (subantarctic America, South Georgia, and the true antarctic region), 145 of which were secured by the expedition, 34 of them being new species. The true antarctic region contains 106 known lichens. It is an interesting fact that the relation of arctic to alpine lichens is much greater than that of subantarctic American species to those of New Zealand. It is further obvious that the similarity of subantarctic to arctic species is less striking than that of antarctic to arctic species, 43 per cent of the antarctic lichens being found in the true arctics and not in temperate regions.

The new species are distributed among 17 genera, *Lecidia* and *Buellia* having 5 each; *Pertusaria*, *Aspicilia*, and *Verrucaria* having 3 each; *Bacidia*, *Lecanora*, and *Parmeliella* having 2 each. The remaining genera, each represented by one new species, are *Biatora*, *Thelotrema*, *Placodium*, *Caloplaca*, *Pannoparmelia*, *Parmelia*, *Rinodina*, *Acarospora*, and *Chaetomium*.—J. M. C.

A new Williamsonia.—SEWARD¹⁹ has studied petrified material of a *Williamsonia* from the Jurassic of Scotland, to which he gives the name *W. scotica*. It proves to be an exceedingly interesting and suggestive form. The most striking vegetative feature is the replacement of the usual scales (ramentum) of the Bennettiales by an abundance of very long hairs, such as occur on *Dioon edule* and other living cycads. The sections of the strobilus, the first obtained of a *Williamsonia*, are of special interest. The bisporangiate character is problematical, since no stamens were evident and NATHORST has shown that some species of *Williamsonia* were monosporangiate.

¹⁷ DARBISHIRE, OTTO V., Lichens collected during the second Norwegian polar expedition in 1898–1902. Publ. Soc. Arts and Sciences Kristiania. 1909.

¹⁸ ———, The lichens of the Swedish antarctic expedition. Wiss. Ergebn. Schwed. Südpolar-Exped. 1901–1903. 4: no. 11 (pp. 73). pls. 3. 1912.

¹⁹ SEWARD, A. C., A petrified *Williamsonia* from Scotland. Phil. Trans. Roy. Soc. London B 203: 101–126. pls. 9–12. 1912.